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THE ROYAL LINE

ACCOUNT BOOKS

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VERNON McMILLAN, Inc., ELIZABETH, N.J. 07208

10 (17) 2 2
18 (10) 2 2
possible
sent to H.C.
5255
shoots
specimens
shoots
specimens at C. Catalina
shoots
specimens at C. Central
12 (10) 2 1

GRAY HERBARIUM, HARVARD UNIVERSITY
PLANTS OF BOLIVIA

Prov. of La Paz: Dept. Larecaja, 6–10 km E of Consata along new road. (68°30′W – 15°15′S). Montane forest.
Alt. 1350–1400 m. Steep slope along waterfall.
Terrestrial fern. Leaves dimorphic.

Det.
Coll. Calvin R. Sperling, S. King, S. Beck, J. Solomon
No. 5438 14 December 1981

Type

10 (17) 2 2
18 (10) 2 2 possible

5255 sheets sent to H.U.

sheets # specimens of U. Catalina

sheets # specimens of U. Central

12 (10) 2 1

GRAY HERBARIUM, HARVARD UNIVERSITY
PLANTS OF BOLIVIA

Prov. of La Paz: Dept. Larecaja, village of Sorata. (68°40′W - 15°45′S). Alt. 3,570 m. Ca. 10-15 km from Sorata on the road to La Paz. Terrestrial fern on road bank.

Det.
Coll. Calvin R. Sperling & Steve R. King
No. 5359 6 December 1981

T Y

5255

GRAY HERBARIUM HARVARD UNIVERSITY
PLANTS OF COLOMBIA
Basellaceae

Boussingaultia

Department of Cundinamarca, Southwest of Bogotá, 1 km. Northwest of the represa de Muña on the road to El Colegio. Steep slopes Southwest of the road overlooking the Rio Bogota. Dry rocky slopes with hard clay soil, scrubby brush and brambles. Succulent vine to 4.0 m. climbing over brush. Infloresence dense, much branched; Flowers yellow-orange in bud, cream colored when open, not expanding fully, becomming yellow-orange then black when fruit is mature; perianth surrounding fruit at maturity; fruit falling early; flowers observed visited by many small flies. Stems red or reddish, dextrosely twining, base of stem very fleshy, with a brown papery epidermis at base, sending up new shoots from base; leaves, especially the larger, cordate, younger leaves not obviously cordate, leaves reddish, the margins red, very fleshy, not producing tubercles in the leaf axils; perianth segments not keeled, stamens reflexed; anthers withering or falling quite early; stigma capitate, not divided, scarcely lobed but more or less triangular. Many seedlings observed.

Coll. Calvin R. Sperling

No. 5255 3 October 1981

10 (17) 2 2
12 (10) 2 2

5255

shoots possible sent to H.C.

shoots # spermies of C. Catalin.

shoots # spermies of C. Control

12 (10) 2 1

T Yr 550r (2x)

Live material

5255, 5295, 5297, 5293, 5291, 5303, 5309, 5314

5253
10 sheets

5254
6 sheets

October 14, 1981

outer layer. Ecuador, Prov. of Carchi. w. of Tulcan. & West of ~~El~~ Turiño. At the Aguas Hediondas, a sulphurous spring of very hot (almost boiling) extremely malodorous water. 3,450 m. Open areas were paramo with Espeletia and Puya. Collections made at the head & side wall of the valley in Forest. Polylepis ? & Weinmania? on twigs. ~~of branches~~

(77° 55, 648 N)

5256

(1), 1 - Lichen, on twigs

5257

(1), 1 - Lichen, on twigs

5258

(1), 1 - Lichen, on twigs.

October 3, 1981

Colombia, cundinamarca. SW of Bogotá 1 Km NW of the represa de Muña on the road to El Colegio. Steep slopes SW of the road overlooking the Rio Bogota Dry rocky slopes with hard clay like soil scrubby brush, brambles. Rubus, Passiflora. Loranthaceae shrubs etc.

5255 Boussingaultia

① QCA 4 Vine climbing over brush, to 4+ meters long. Inflorescence dense, much branched. Flowers cream colored - not expanding fully, becoming Live mat. at yellow-orange, then black when fruit is mature.. QCA. Flower withering around mature fruit. Fruit falling early above the 2 pedicillar bracts. Flowers yellowish-orange in bud. Observed visited by many small flies. Stems red or reddish, leaves, especially the larger cordate, the younger leaves not obviously cordate leaves reddish, the margins red, very fleshy and mucilaginous. Stems twining dextrously about twigs. Perianth segments not keeled stamens reflexed, anthers withering or falling quite early, stigma capitate not divided scarcely lobed but more or less triangular. Not producing tubers at the base, Sending up new shoots above ground from near the base base of stem very fleshy, with a brown papery outer layer. Leaves ± folded. Seedlings seen.

Oct 16, 1981

Ecuador. Prov. of

N. of Ibarra on old Panamerican Hwy, for a few Km. then right on road to Mariano Acosta. on Road ½ way between Yura Cruz and Mariano Acosta.

Alt. 3450m. semidry ravine shrubby with Alnus. (78° 03' W, 0° 20' N)

5259

3(2),1,- shrubby to 0.75 m. Valeriana. - flowers white (2)→4

5260

5(5) 1,- Ericaceae, shrub to 2.5 m. ~~flowers~~ Tips of calyx ~~teeth~~ lobes and Corolla pink.

5261

3(3) 1,- Gesneriaceae shrub to 2.0 m.

shrub, Corolla red orange on exterior. orange on interior, exerted ? anth. with black anthers ?

5262 Viburnum ?

5,(3) 1,- opp. leaves, ~~Calyx~~ sparsely shrub. ~~flowers~~ Calyx white

5263 Viburnum?

5(6), - shrub to 3.0 m. calyx white

3550 m edge of parine - forest transition in burned parine.

5264

5(3), - Asteraceae, shrub to 1.0 m. rays pink turning white.

Oct. 17, 1981 78° 03' W 0° 20' N

Dense forest at 3500 m. on East slope very steep slope. cloud forest - old growth forest

5265 Polypodium.

3, 5, 1, - pendant from underside of overhanging tree. rhizome creeping along underside of tree

5266

9, (5), 1, - filmy fern. epiphyte on lower parts of tree trunks

5267 Grammitis

5(2), 1, - epiphytic & pendant on mossy tree trunks

5268 Polypodium

4, (3) 1, - epiphytic on tree trunks and on rocks. leaves arching out and becoming pendent.

5269 Gramatis

L- forming colonies on steep very mossy slopes

5270 Thelypteris

1(2) 1,- on deep moss on steep slopes., rhizome more or less horizontal in moss

5271 Elaphoglossum

1(5) 1,- rhizome erect and free standing. growing on tree trunks & moss on steep slopes.

5272 Elaphoglossum

1(3) 1,- on deep moss on steep slope

5273 Lycopodium

5(4),1,- Terrestrial on steep moss slope

5274

2(2) 1,- Araceae., stem erect. inflorescence arching out, becoming pendant.

5275 Peperomia

abundant on mossy slopes.

5276

2(2) 1,- Ericaceae, Corolla red, tips of corolla whitish, Calyx and pedicels red. on shrubby epiphyte

5278 Cladina.

(1) 1,— terrestrial, on mossy

5278

(2) 1,— Orchidaceae, terrestrial orchid on mossy slopes, sepals brown down the median, margins of sepals yellow. Petals yellow w/ brown spots on wide. Staminode with brown spots on the upper back side. Lip w/ 4 fan like projections.

8550 m. shiny upper part & edge of spurs. spurs burned

5279

(2) 1; Asteraceae, shrub to 3 m, bracts blue-purple.

5280

(2) 1 shrub to 3.0 m., fruits maroon 2. ovate sepals, succate. flowers yellow dark blue ?.

5281

(5) 1 Tree to 5.0 m., petals yellow stamens fused & much convolute a contorted

5282

Polygonaceae, climbing on shrubs.

5283

Asplenium, creeping over mossy tree trunks.

5284 Lycopodium.

growing over mossy old fallen tree.

5285

Loranthaceae.

small tree 4 m. flowers yellow-orange.

5286.

shrubby Loranthaceae / on trees corolla red at tips and base, orange inbetween: interior of calyx orange-yellow.

5287

Loranthaceae, parasite on large woody ericaceae (cavendishia?). leaves brownish fruit white-gelatinous.

5288 Oroposon

(1) 1,~ T dark brown on twigs (dead)

5289 Oroposon

(1) 1,~ T ashy gray

5290

2. (2) 1, 1 Monocot, 1m to 5.0m.

5291

(1) 1, 1 Forbs? on exposed (road) soil along road
x on pampa
1

Oct. 19 Mariano Acosta
ca 2950 m. (77° 59'– 0° 18 N)

5292 Physalis peruviana

4 (4) 1, 1 cultivated in garden, recently burning
Italy last to garden, fruit eg Tarty &
Tart (Red sample Taken)

Hacienda Yura Cruz, above Hac. Yura Cruz
3 Km Alt 3350. sparsely disturbed
hillside sandy shrubs with some Hirea
and Xerophytes. (78° 03' – 0° 00 N)

5293 Tournonia hookeri

(35) 3 1 climbing on shrubs on stony ravine
Live mat. bare slopes running along gravel and
at QCA occasionally entering bare slopes with
scattered epiphytes.
Live
(40 sheets) (Red sample (1.2) Taken)

each flower & there is almost even yellow — otherwise flower green — succulent. leaves & petioles reddish, appearing on the upper side, but veins evidently enlarged green. stem & most succulent flower green. not long — in comparison to whole. stem slight not very stout. the petiole to top & node? flowers delicately away from stem upper (back) green and more & on the same in whole petiole ○ — not figured like silicon, otherwise apparently thickening slightly upper flowers. seeds falling & run in mature & taller.

flowers greenish — to cream greenish. the flowering upper & petals open leaves & and surround the developing seed, leaves & shade much larger & flower stopping — yet the stem (petiole old stem) not to produce new shoots at a node

the stem ○ was red between the nodes where the stem was curved and veining but not at the nodes.

5 October 20.

steep slope overlooking Ibarra & Lag
La ... 3 Km S. on the road to
Manuel Acosta the Town of old
Panamerican Hwy. Alt. 2500
steep dry sandy slope (78° 05'W 0° 23'N)

5294 Baccharis genistelloides

Low (4) small seedlings found growing
Live mat. in bone dry soil - will send back to
at QCA. HUH for growing, very red colored leaves

0°5'S

October 23. Prov. Cotopaxi
road to Zumbagua through Pujili
at Casa → 2 Km west of past Zumbagua. Intensive Agriculture
Saraosha growing in shrubby cactus. 3.670m
Dry sandy ~~road~~ climbing over 2 steep hills
down along road.

5295 Baccharis genistelloides (78 54 35 S)

18 1,1 growing on cactus reproducing
Live mat. exclusively by vegetative means - stem
at QCA. rooting stems thickening at base
n.v. "Loto". Taken with water
for stomach disorder. and also used
~~for aspirin~~ applied to inflammations (bruises)
~~Cancer pamchua + panchas.~~

much branched - little tuberous.
Inflorescence mostly single from axil.
Stems & leaves very bristly.
leaves mostly folded - tapered to a
point - not hardly ~~at~~ at all carinate

flowers yellow orange & red, white
when freshly opened - petals succulent
anthers bent in bud.
style pistillate - stigma capitate
not divided
seeds of January - early falling
leaves extremely succulent
an attractive plant.

Oct. 24.
On road 3 Km east of Lutacunga
2550 m

5296 Lupinus notabilis?
10 1:1 cultivated in row at edge of garden
dry soil, plant woody at base 2 m tall
standard white yellow blue-purple
N.V. Chochos

Prov. Tungurahua

S. of Lalacunga, then East on the road to Golpon - 2 Km past Pillaro 16 Km from the Pan Am Hwy. 3,000 m. Alt. 78°32'W - 1° 16'S

growing on steep bank along side road and on top of earthen walls.

petals white -, basal range - yellow petals cuneate, style pink stigma 3-lobed. Flower reddish leaves & stem very succulent & brittle

5297 Bouvardia.
2 ♂, 1 — + live material
Live mat. —
at QCA

13 Km from Pan am Hwy.
at turn Pucalu Pillaro 78°33'W - 1° 16'S

5298 Cyphomandra
1, 1 cult. in garden, fruits red with longitudinal darker stripes, corolla reddish in bud, cream in flower tree to 2.5 m.

Provincia Tungurahua

10 Km from ~~road~~ Pan am. on Road to Pillaro
just w. of a bridge over the river
what name? (major valley. Rio Ambato ✓
Dry ~~sea~~ loose rocky soil. ~~Rio Catuchi~~
Alt. 2600 m on Rd 10 Km east
78 32' w. of Pan Am on Road from Ambato To Pillaro

5299. Polypodium Fiy's Rio Ambato.

5, 1, 1 rhizome much branching & covered with dense roots.

5300

5 1, 1 petiole ½, white, low shrub.

5301

2 1, 1 shrubby legume, flow rose (Leguminosae)

5302 Tortula

Oct. 25

road from Ambato - Riobamba

West of Road on side road to Tisaleo.

In town of Tisaleo, 3150m.

78° 31'W - 1° 21'S

5303 Boussingaultia

1/1 on earther fences, n.v.

Live mat. Tana yoyo - a morado form higher

at. QCA. up is said to be used for brooms

style pink, stigma ♡ 3-lobed

very recurved, lower stem bearded

stem bristly., leaf & red stem bushy

much dissected

---

1 Km W of Tisaleo. in section

called Calvario. 3550m.

5304 Ullucus tuberosus

1/1 cultivated. in mixed planting with Vicia faba

(in flower) potatoes and scatter

Oca y Mashua. plants w/o flowers

and said to be 7 months old.

tubers round, ~~red~~ light red.

leaf & stems red.

Tuber shape: round 1.5 - 4.5 cm

Tuber color: light red, turning maroon in sun.

Inner layer red than white

5305 Ullucus tuberosus

~~3~~ 1,1 Cultivated in mixed planting with Vicia faba. plants 4 month old. Just starting to produce tubers. Tubers long slightly curved - white with occasional light pink dots. flowers yellow. one flower seen with 6 stamens.

5306 Tropaeolum

1,1,1 flowers orange. a few plants mixed with ullucus. tubers cream yellow, long

8 3450m 1 km w of Tisaleo

5307 Ullucus ~~tuberosus~~ tuberosos

4 1,1 plants being harvested, tubers white much fewer white Plants cultivated than red. 10 mo. old sold in markets in Guayaquil. mashed & fried in tortilla

- plants lighter colored than red tubered ones these with old inflorescences apparent.

on red plants of same age none present. These also with more than aerial stolons

5307. cont. Tuber shape. long & curved with few eyes. 1.5 x 2.0 cm — 3.0 x 11.0 cm. Tuber color: white, with faint hint of green. Occasional pink-red dots. Inner layer white dot color 1/2 way in only.

3400 m.

5308 Oxal. s

8 - 1,1 Flwr yellow, mixed with Ullucus

Liv.

3250 m.

5309 Bousingaultia

3 - 1,1 on earthen wall. Same plot as 5303

=

W. of St. Lucia (Sector) 1 Km west of Pueblo Psaleo.

~~3700m.~~ 3370 m

5310 Ullucus. tuberosus

1 1,1 pk w/bl bean red tubers.
3 month ed. w/ flowers

3400 m

5311 Ullucus tuberosus

8, ? ?
1,1 red tubers (Cuillco) in Plswon

5312

5.E

5313

4.?

5314

4.?

5315

5321

5314

9 ste
Pennsylvanicum var O ciliare

53
5.E

la plus

la moins

chez
/

la plus 5214 O

11

la égal { 5304 O
5303 O
5215 O

S

531-
4

5295 pourly villosa
O

5245

531
4
531
↓
532

mat.

mail # la avait
flowers

5294 ?

than

3760 m.

5312 Ullucus tuberosus

5.[illegible]?. the plot with lower not curved and each other one plane. The plot with flowers other w/ leaves curved w/o flower. this plot a little lighter green. + more spreading. tuber apparently red.

prov. Cotopaxi

October 26.

San Juan de pastocalle

postcode, at Boliche, 3300

5313 Ullucus tuberosus

4.??. occasional pith w/ 6(7) petals & stamens

Oct. 27. Quito

Av. Carlos Montúfar 569

ca 2850 m.

5314 Boussingaultia + lianas not.

4.??. rclt. over stone wall, hanging to 3 m.

5315 ↓ 5329 } Tuber collections of Ullucus tuberosus.

no herbarium vouchers.

dates out of sequence with ~~main~~ cotton collections

Oct. 23. 1981

#5315 Ullucus tuberosus Caldas.

Prov. Cotopaxi, collected from a store in Zumbagua. Plants were said to be harvested in July - Aug and Sept. and planted in Oct & Nov. There then were starting to sprout and were to be planted.
Tuber shape: round 2.0-4.5 cm.
T- clr.: Yellow w/ many red dots.
Inner layer yellow.
(Tubers only)

5316 Ullucus tuberosus Caldas
mixed up above.
shape: round, 2.0 - 4.0 cm.
color: pinkish red-orange, with occasional darker red dots.
Inner layer orange-yellow then white.
Tuber collection only.

5317 Ullucus tuberosus Caldas.
mixed w/ olca.
shape: round 2.5–4.0 cm.
Color: yellow, occasionally with small red dots, inner layer all yellow
Tuber collection only

Oct. 24. Prov. Cotopaxi.
Collected in Latacunga market.
Said to be grown at Guaitili and Chorulona. Said to have been harvested the previous day.

5318 Ullucus tuberosus
shape: more or less long and 2½–3 cm. to 2.5 × 8.5 cm
Color: yellow, with occasional red streaks and dots. Inner layer thick yellow – becomes white
Tuber collection only

5319. Ullucus tuberosus Caldas.
" " said to be
grown east of Latacunga at Potrerillo.
Said to have been harvested yesterday.
Tuber shape round: 2.0–4.0 cm.
Color: yellow, w/ many red dots and patches. Inner layer yellow. Red dot color only in outer half
Tuber collection only.

5320 Ullucus tuberosus Caldas

Stems ~~or~~ olive

Shape: round 1.5 - 4.0 cm

Color: maroon red, inner layer orange yellow

Tuber collection only.

5321 Ullucus tuberosus Caldas

Stems olive.

Shape. oblong and knotty ▽ to 4.5 x 6.5 cm.

Color: yellow with red dots.

inner layer yellow.

Tuber collection only.

5322 Ullucus tuberosus Caldas

Stems olive.

Shape: oblong & knotty to 5.0 x 6.0 cm

Color: yellow, inner layer whiter than rest.

yellow becoming white.

Tuber collection only.

Oct. 24, 1981.

5323 Ullucus tuberosus Prov. of Cotopaxi. Collected in field east of Latacunga near Potrerillo. Plants with virus Foliage, but most all were dead and some tubers starting to sprout.
Shape: round: one elongated 4.0 cm
Color: darker yellow, with many red dots even larger orange yellow

5324 Ullucus tuberosus Caldas
Prov. Tungurahua. Collected in market in Ambato, said to be grown at Pinllo, east of Ambato. Oct. 25 1981
Tuber. shape: round 2.0 - 4.5cm.
Tuber color: red, with very faint orange tint. also with faint red dots in a few tubers.
Inner layer red with faint orange color.

5325 Ullucus tuberosus Caldas
Prov Tungurahua Collected in Ambato market. Oct. 26. 1981 Plants grown at Tisaleo.
shape: roundish, slightly oblong 2.5 - 4.5 cm
Color: orange red with very faint red dots.
inner layer orange - yellow.

#5326 Ullucus tuberosus Caldas.
Same as above.
Shape: round, oblong to knotty long (two)
4.0 cm, 4.5 x 7.0 cm., 3.0 x 11.0 cm.
Color: red with faint hint of orange and some faint darker spots. Inner layer red, then white.

#5327 Ullucus tuberosus Caldas
Same as above.
Shape: round & oblong knotty 2.0 cm,
3.5 x 5.0 cm.
Color: dark red. Inner layer red then orange-red.

5328 Ullucus tuberosus Caldas
Same as above.
Shape: round 3.5 cm
color: yellow with red lines through the eyes at the nodes. Inner layer orange yellow main flesh of tuber yellow except whitish at very center. Tubers looking oldish.

5329 Ullucus tuberosus
Same as above/ Shape: round-oblong
2.0 cm, 4.0 x 6.0 cm.
Color: orange-red with faint red dots.
inner layer yellow-orange.

5330 - 5334 Tulcan Tubers

5332 cross over Tulcan

Tulcan market (Calone) Oct. 29. '81

5330 Ullucus tuberosus

collected in Tulcan market, said to be grown at El Carmelo.

Shape: round to 3.5 cm

color pink, inner layer white

5331

" "

Shape: round. a few slightly oblong to 3.5 cm

Color: inner layer white. inner white. with rough patches on skin

5332

" "

shape: long knotty with many eyes eyes recessed

Color: pink, inner layer white

5333

" "

Shape: round, to 4.5 cm a few rough patches on skin.

Color: white, with faint pink in places inner layer white

5334

" "

Shape: round to ○ 4.5 cm
with some rough patches on skin.
Color: dull orange, inner layer pink.

5335

" "

Shape: long and curved to 12.0 x 2.0 cm
Color: inner layer yellowish white
outer pink.

5336

" "

Shape: round to ○ 4.0 cm
Color: dark red maroon, inner layer
violet. violet color extending a little
into ~~flesh~~ Flesh of tuber

5337 Oropogon

Sold in market at Tulcan, tied up in
first sized bundles. Also "Contra Hierba" or
"Contra yerba". Used medicinally: taken
with a shot of rum in morning when not feeling
well. Eaten a ground and mixed with
liquid 20-30 Sucres per bunch

Peru. 1981

Nov. 14 Calun R. Spectus

Steve R. King.

Department of Pasco 1 Km west of

Ninacaca

5338 Lepedium meyenii

=

Huancayo market

5339 Ullucus tuberosus

tubs only. curved long & 7.0 cm x

2.0 cm.

7 tubers

colr. yellow with red dots

inner layer yellow., flesh yellowish

oblish tuber

Ayacucho market Nov. 23

5340 Ullucus tuberosus

long ~~acuse~~ oblong orange 00 6.0 cm x

3.0 cm.

colr light orange, inner layer

orange + a little light yellow.

flesh yellowish

5341

Knobby orange Knobby, flatish - deep set eyes

t 4.5 cm

cln. orange. inner layer orange clr yellow. flesh yellow

5342 Ullucus tuberosus

~~Leaf yellow~~ long curved. to 8.0 cm

Tubers cln. yellow to yellow orange. inner layer yellow. (a very few small red spots

5343 Ullucus tuberosus

small round pink orange, to 2.5 cm

round to flattened

pinkish orange, inner layer pinkish. flesh yellowish

5344 Ullucus tuberosus

dried Ullucus

5345 Ullucus tuberosus

red Ullu. oblong 5.5 cm x 4.0 cm

colr. reddish orange pink

inner layer. pink red → then yellow orange.

flesh yellowish

Nov. 24. with Steve King

3 Km from center of Ayacucho on the road towards Cuzco. ca 2950 m.

5346 Bourreria sp.

growing on side (wall) along road. Plant rosulate producing small bulbils in axils

no flowers.

n.v. enredadera.

said to be cultivated and not wild.

used leaves applied to reddened Bruises. said to be propagated by the bulbils.

(A hummingbird collected when she was stopped. Live notes only!) sent back to H.U.H

Nov. 23.

with Steve King

Town of Abancay - by jar station above town center

5347 Boussingaultia

small 1 ft succulent plant growing atop adobe wall along street.

Nov. 26 with Steve King

5348 Boussingaultia

5 Hacienda Granja K'ayra outside of Cuzco.

Cultivated at pot at entrance to head Agronomy office. base of stem woody - one to 3½ inch across. Lower succulent. no reddish tinge!

Bolivia

Dec 6, 1981

with Steve King

Pour. La Ta

Road going up from Sorata
ca 10-15 Km up road. alt. 3,570 m.
disturbed grazed vegetation & agriculture
near road.

5349 Ullucus tuberosus (Caldas)
looking not to have been planted but plants
that had sprouted from tubers left after
the previous harvest. Stems reddish.
a few plants starting to form small
white tubers from underground stolons.
flowers yellowish green, red tinged.

5350 Brachyotum,
shrub to 2.0m alongside road.
Calyx red, corolla dep. purple to blackish.
Melastomaceae.

5351
Compositae, shrub to 2.5 m. along road
flowers cream white.

5352 Veronica

flowers blue.

~~on~~ an occasional weed in field of Ullucus tub and Oxalis tuberosa

5353 Oropogon

on adobe fence, pendent, then arching up & out at tips.

5354 Oropogon.

" bronish grey.

5355

orange Lichen " "

5356 Ullucus tuberosus Caldas

cultivated in field. flowers greenish-yellow many some flowers with 6-8 stamen and petals.

5357 Oropogon

on shrubs. pendent and then arching up & out at tips

5358 Digitalis

disturbed pasture roadside. ~~Flowers~~ Corolla violet with darker spots inside

5359 Jamesonia!

a road bank.

~~3230~~ 3230 m.

5360

Ericaceae, small shrub to 0.3m. on dry road cut. ~~Flow~~ corolla white.

5361

Ericaceae. small creeping shrub on dry road cut, corolla pinkish, calyx red. flower buds red.

5362

Malvaceae. petals 5-3 parted, red sepals 5. pinkish with a darker red median line. Tree to 2.5m growing from old rock fenceline.

5363 Lepicheinia

4 rosulate, shrub to 2.0 m., red inflated calyx present

5364.

Lythraceae? upper two petals reflexed each one large showy flower. petals dark violet.

December 7, 1981

with Steve King.

on road to San Pedro from Sorata. 1½ hour walk from Sorata Steep rocky slope above road. 2630 - 2750 m. many terrestrial bromeliads

5365

orchid to 1.3 m. sepals & upper 2 petals magenta, labellum magenta to lavender, with ~~to~~ lighter area at ~~front~~ union of the 3 lobes of the labellum - lighter area turning yellowish ~~no fra~~ no fragrance noted in clumps

5366

orchid ● flower rose to magenta
outer 2 petals slightly curved at upper
upper margins. Labellum gradually
fringed, yellow down the middle
staminodium ? ↓ curved nose. creamy clump
flower fragrant. to 1.0 m.
in ~~lumps~~ clumps

5367

orchid.

yellow green

forming massive
clumps on rocks

Tepals yellow orange, long tips
Yellow green. no Fragrance noted

5368

orchid. flowers greenish yellow.
forming large clumps on rocks.
no Fragrance noted

5369

orchid. flowers. yellowish green.
no Fragrance noted.
forming large clumps on rocks

5370 Peperomia.

on rocks, stems reddish.

5371 [redacted]mia. Pilea.

on rocks, flowers reddish.

5372 Oxalis

flowers yellow, common on rocks

very succulent.

5373 Pilea ?

low very succulent, flower red.

on rock on rocks.

5374

moss on rocks

5375

moss on rocks

5376

Tortula ? on rocks

5377

moss on rocks

5378 Peltigera

" on rocks.

5379 Oropogon

"

5380 Cladina

"

5381

parmeliaceae "

5382 Cladina

"

5383 Oropogon

"

5384

Parmeliaceae on rock

5385

gray, Lichen on rock

same but pleurodephytes

5386 Campyloneurum angustifolium (Sw.) Fee
Campyloneuron on rocks. det R.T. 85

5387 Campyloneurum angustifolium (Sw.) Fee.
"Campyloneuron ssp amphostenum (Kl.) Lell ined.
det R.T. 85

5388 Campyloneurum angustifolium (Sw.) Fee
campyloneuron ssp. angustifolium
det R.T. '85

5389 Niphidium crassifolium (L.) Lell.
campyloneuron det R.T. '85

5390 Grammitis peruviana (Desv.) Maxon
~~Phyllitis~~ ? det R.T. '85

5391 Polypodium pychocarpon C. Chr.
det R.T. '85

5392 Polypodium lachniferum Hieron.
polinobum group det R.T. 85

5393 ~~Pellaea~~ Pellaea ternifolia (Cav.) Link
det R.T. '85

5394 ~~Pellaea~~ Notholaena nivea (Poir.)
Posu. var. tenera (Hook.) Grisel.
det R.T. 85

5395 Cheilanthes myriophylla Desv.
Oxyoderis det R.T. 85

5396 Cheilanthes marginata HBK. det RT '85
Oxyop

~~5397~~ Woodsia montevidensis (Sprong.) Hieron.
Oxyop det R.T. '85

5398 Elaphoglossum Sellowianum (Pr.) Moore
det R.T. 85.

5399 Elaphoglossum Jamesonii (Hook & Grev)
Moore bet R.T. 85

5400 Asplenium praemorsum Sw.
Asplenium. bet R.T. 85

5401 Asplenium monanthos. L.
Adiantum bet R.T. '85

5402 Asplenium praemorsum. Sw.
Asplenium same as 5400. bet R.T. 85

5403.

Fl yellow, shrub to 2.0 m in ravine
on rocks

5404 Ullucus tuberosus

found on whole range 2680 → 2750 m.
growing in V of the ravine ~~was~~ running up
the rock face. Tuber buried in
dirt and rocks. Tuber pea size to
marble size. pink, white or yellowish.
very sticky mucilaginous.
just starting to grow. plants
up to 8 in high, stem reddish.
Tubers easy to find once we had
climbed up ravine & exposed the soil.

5405 Physalis

growing on dry soil above roadbank
not cultivated! Flowers yellow
Alt. 2600 m

Dec. 8 1981 with Steve King

Town of Sarata, just below plaza, left side
Trail near

5406 Cyphomandra

tree to 5.0 m. cultivated.
Fruits yellowish when immature, not very
pointed. - oval. with darker stripes
2750 m

Alt. 2530 m.

5407

Rutaceae, shrub to 2.0 m. on steep rocky
slope along trail near river.
Flowers cream-yellow, fragrant.

5408

Labiatae, bushy shrub to 1.5 m.
flowers red.

5409.

Amaryllidaceae flower ~~yellow~~ orange yellow style yellow, from a deep rather papery bulb.

5410 Selaginella peruviana (Mild.) Hieron
on stony slope. det P.T. 85

5411 Bouvardia ~~fuchsia~~ rose
on thin soil on rocky outcrops, also stony ~~ar~~ and ~~savanna~~ clay shade and herbs. Some succulent. ~~root~~ producing thickened tubers, stems reddish at base. flowers yellowish orange., stamens slightly longer than the style. stigma barely 3 lobed - not divided. sepals - after flowering the petals close but the stamens - the anthers are just visible above the closed petals. Petals turning dark - soon followed by the sepals. — Pericarp black and adhering around the fruit leaves about cordate to ovate leaves petioled.

sepals circulate and stamens at with a curve.

5412 Boussingaultia

on the rise 2 rocks. – Twiny 2 climbing plant (dextrously) stolen & hooked. leaves succulent, sessile oval ⬭ flowers. racemes a slightly pedicellate. sepals greenish white ⌒. petals. ~~stamens~~ white, stamens almost 2x as long as the style. stigma barely noticeably 3 lobed – not divided ovary reddish. no such a mature fruits ~~and~~ seen – apparently not producing tubers although the base of stem does thicken.

sepals not succulate

fiber should verify the flowers as they were very photographed while hand held.

5413 Boussingaultia ramosa

11 some habitat.

leaves succulent – more or less cordate sepals purple-yellow. sepals succulate – ⌒ standing at. style & stamens more or less the same length

using dextrose.

pedicells slightly thickening after fruit is maturing.

sepals + petals turning black- adherent around fruit.

2750

Town of Sarasota - road to San Pedro

5414. Boussingaultia.

clay hard clay soil bank clay road.

no flower. long large tubers & thickened stems.

Dec. 9. with Steve King garden at Residencial Sarasota at Sarasota.

5415 Cyphomandra.

calt tree to 30 m. fruits used to make marmelade.

347 – at camp.

341

Sorata ob. Reading 32227

Oropogon 47, 3920 m

oropogon pulchrum pink ob. 3500

oropogon (w/ rose leaves) 42 3000 m shrubby

Dec. 14, 1981 with Stephen Beck, Jim Solomon, Steve King.
road from Sorata to Consata, the high road.

Km 20 from Consata (mud mesa Scrub 3920 m. steep rock face along road

5416 Oropogon

5417 Oropogon

Km 39 3500 m.
on shrubs, shrubby heath

5418 Oropogon

5419 Oropogon

Km 65 dry scrubby & slopes. 3000 m.

5420 Oropogon
on shrubs.

5421 Oreopanax
on shrubs.

5422 Befaria
shrub to 2.0 m. flowers pink

---

or 120 part Sorata
Part Cassata 6 Km alt 1400m
steep slope along waterfall in
forest. on S. side of road.

det R.T.-E.

5423 ~~Phlegmariurus~~ Cnemidaria speciosa Presl.
ferns to 2.0 m. rhizome horizontal
stat and. shat.

5424 Drymonia
(Gesner) Bracts red. scarlet on
shrubs.

5425

Gesner, ~~petals~~ sepals orange red, corolla yellow
~~undersides~~ undersides of leaves
purple

5426 Psychotria.
Rubiac. shrub to 5 m.
flowers yellow axis & inflorescence orange.

5427 Elaphoglossum latifolium (Sw.) J. Sm.
terrestrial on moist bank. det R.T. '85

5428
orchid. terrestrial,

5429 Thelypteris Gardneriana (Baker) Reed
terrestrial on moist rock face. det R.T. '85

5430 Pepperomia
moist rock face.

5431 ~~Adiantum~~ Lindsaea guianensis (Aubl.)
terrestrial Dryand. det R.T. '85

5432 Blechnum confluens Schlecht & Cham.
terrestrial on moist rock face. det R.T. '85

5433 Polypodium fraxinifolium Jacq.
epiphyte. terrestrial det R.T. '85

5434
Rubiac, flowers blue. vining under brush

5434 Besselaria
Gamet. Corolla red on outside, yellow on inside
large herb to 1.0m.

5435 Asplenum Flabellulatum Kze. det R.T. 85
Trichomanes. Asplen. sp. terrestrial on moist rock face.
rooting at leaf tips.

5437 Trichipteris Dombeyi (Desv.) Barr.
tree fern. leaves to 2.0m det R.T. '85
spiny. trunk 1.0m.

5438. Polybotrya
Terrestrial, dioecious.

5439 Pityrogramma Calomelanos (L.) Link.
var. ochracea (Prisl.) Tryon.
moist rocky alluvial roadside, 2 wks reckn.
det R.T. '85

5440
5439. Selaginella haematodes Spring. det R.T.
erect terrestrial, moist ravine. 85

5441 Polypodium Fraxinifolium Jacq. det R.T.
Cyclopium, terrest. fern. '85

5442 Selaginella haematodes Spring.
erect terrestrial det R.T. 85

5443 Psychotria
tree to 6 m. flower yellow.

5444

Gesneriaceae, corolla waxy orange.
scandent, shrubby.

5445 Phoradendron
parasite on tree.

5446

Gentianaceae, lax, slender.
petals, especially upper reflexed.
red, white with red stripes on the throat
= Beck 4466

5447 Polystachya cerulina (L.) Kraelf. det RPL '85
terrestrial, rhiz. horizontal

Dec. 15 with ~~Steve King~~ Stephan Beck, Jim Solomon Steve King
8 km past Consata

5448 Heliocarpus
tree to 4.0m along road at edge of forest.

5449 Costus
edge of forest along road, bracts bright red. corolla yellow, tips of petals red. herb to 2.0m

5450 Psychotria
Rubs. tree to 3.5m. peduncles reddish flowers reddish

5451 Campyloneurum coarctatum (Kze.) Fee
Polypod. Campyloneuron, epiphyte on tree trunk at 1.0m above ground
det R.T. 85

5452 Begonia ? arborea
large herb to small tree. 2.0 m.
the petals white, reflexed, stamens yellow

5453
Gesner. vine like climb. grows high in a tree

5454

Rubia. tree to 4.0m. flowers. purple.

5455 Thelypteris falcata (Lieb.) Tryon det R.T. 85
ten.-sor. (sterile) leaves arching at an step stipe 4.5 rachete length

5456

Gesnor., small ~~shrub-lax~~ scarlet shrub flowers orange

5457

orchid, fallen from tree, on ground. sep. yell. labellum red maroon in interior yellowish at tip.

5458

tree to 5m.

5459 Pleopeltis percussa (Cav.) Hook. & Grev.
Polypod., creeping 5x rhizome a trunk of tree at 2.0m det R.T. '85

5460

near a tree trunk

5461 Hymenophyllum hirsutum (L.) Sw.
Hymenostachyum
~~Hymenophyllum~~ on tree trunk det R.T. '85

5462.

Melastom. shrub to 3.0 m

5463

melastom. flowers lavender, in upper portion of tree, apparently climbing. and apparently terrestrial.

5464 Elaphoglossum. lingua (Radd.) Brack. on fallen log. det R.T. '85

5465

Melast., shrub to small tree to 30 m. flowers greenish white.

5466

vine on tree trunk.

5467 Peperomia
vine epiphyte on log along road.

5468

Melastom. shrub to 2.5 m. flowers greenish.

5469. Psychotria
tree to 4.0 m. flower white.

5470 Psychotria
tree to 5.0 m flower white

5471
Bignon, vining alongside road.
flower white

d+R.T. 85

5472 Hymenophyllum dendritis Rosenst.
Hymenophyllum, ~~ep~~ clinby ~~on~~ on
tree trunk.

5473
Melastom, flower white, shrub to
2.5 m.

5474 Psychotria
flower white, tree small tree.

5475
Annonaceae, flower green white

5476 Pleopeltis macrocarpa (Willd.) Kaulf.
Polypod, creeping on bole tree trunk.
d+R.T. 85

5477 Peperomia
herb to 0.5 m. terrestrial

5478 Psychotria
small tree flowers white

5479 Polypodium proximifolium Jacq. det R.T. '85
vine, climbing up tree trunk.
common.

5480 Elaphoglossum confusum Christ.
terrestrial. det R.T. '85

5481 Piper
shrub to 3 m. along road.

5482
Acanthaceae Mendoncia
flowers scarlet. vine, hanging down in
trees along a watercourse

5483 Selaginella Bangii Hieron det R.T. '85
arching upd at base moist rock face
along watercourse.

5484

Molostoma, grows from cracks on
moist rock face along H2O-fall.

5485 ~~X. pluripetens~~ Grammitis serrulata (Sw.) Sw.
grows ~~along~~ atop boulder in 4th RT. @ 5
stream, near H2O-fall.

~~5486~~ 5 km past Consata

5486

Ochnaceae, large tree, very showy.
flowers yellow, inflorescence yellowish.
more or less leafless below the
shoots, with to 0.6 m

5487

Meliaceae, Trichilia ~~tree~~ sp
large tree. flowers white
Same as 5470 site

5488

Araceae, climbing on tree trunk

5489

~~Small~~ shrub to 2.5 m Fls pendulous
Calyx orange. Corolla ~~flowers~~ yellow

5490

Loranthaceae. Tree 35-40 feet
6-8 in. diam.
Andrad

Dec. 16. with Steve King

Starting a end of road ca. 7 Km from Corvata and hilsey along trail (soon to be the road) towards Mapiri. [redacted] fruit 1-2 hours were a an old but unmaintained 2 ns divable roads. Most collections made last ½ hr walk from end of road (present end a by an old campo) elev. 1400. steep forested slopes above the rio. quite similar to that collected earlier nearer Corvata Not a great deal of very large trees or a huge abundance of epiphytes.

5491 Castor

Eroded ravine, leaves a zone of the flowering shoots, bracts red. flowers yellow orange, tips of corolla reddish orange. (Photos)

5492

orchid, epiphytic on fallen tree trunks

5493 Grammitis peruviana (Desv.) Morton

epiphytic on fallen tree trunk ht RT. 85

not a number sequence

(X)

(X) 5495 Microgramma piloselloides (L.) Copel.

(X) creeping on branches of fallen tree ht RT. 85

(X)

(X) 5494

(X) ?, climbing up tree from the ground. leaves alt. bracts red, corolla tubular.

upper portion of corolla

Top view mouth red tinged,

Cestrum?

5496.

Annonaceae, small tree to 5 m, bracts green, sepals yellowish & base green at tips, petals not fully open

yellowish t base, green t tip.
ovary orangish yellow, flowers extremely fragrant.

5497 Vittaria Moritziana Melt. det R.T 85
~~stiptata~~ Kunz
marginal, coriaceous sori, pendant epiphyte from trunk of forest tree
Det. P. Tryon 4/82

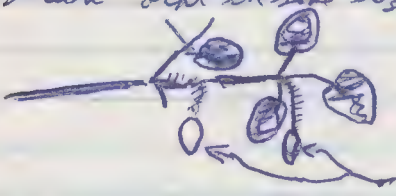
5498 Lycopodium aqualopianum Spring. det R.T. 85
epiphytic on side of tree trunk at 2.0 m.
pendant, lower 6- ranked.
(near Skotchii)
(Juby... Selago)

with Steve King
Dec. 17. done trail.
just past 2 ~~very~~ large grassy clearings
ca 10-11. km by bot from end of trail.
1350 m.

5499
Cornelinaea, large erect herb to 1.5 m.
near ~~water~~ moist shady ravine near H2O-fall.
flower is red, lavender & upper surfaces
lighter below; underside of leaves
purple streaked.

5500 Cyphomandra.

obey trial, small tree. to 6.0 m.
orchard at fern stop slope.
fruits yellow and green striped when
mature. (see may photos.
inflorescence terminal. tree only with
the fruits - no flowers. the fruits
mostly were from the last few flowers
often 2. fruits from an inflorescence.
often 2 rarely 3 inflorescences each bed
fruits about the same size.



Fruits from terminal

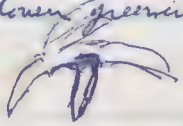
inflorescence, about the same size but
ones higher up must be younger
, tree avoid many fruits, leaves
easily fallen off - brittle.
fruits tolley to grasp when mature.
bark of tree granulose roughened.

5501

orchid on epiphyte in trunk of Caoba tree
flowers yellow

5502

orchid flowers greenish yellow, epiphyte on
Caoba tree



Typ of Labellum slightly darker labellum
sharply bent down near the base
& also with a dark round spot at the bend

~~5503~~

1260 m. dense forest on flattish
ridge. on west side of large river
which enters the main river.
Forest looking much like lowland forest
with many palms, including large
trunkless palms and many large trees.
deep moist humus on forest floor.
many more lianas and fewer epiphytes
at lower level in forest.

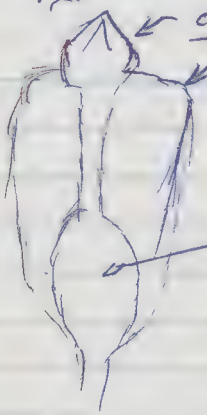
5503

Marcgraviaceae. - Small Caoba bush tree
on the forest floor, petals yellow orange
reflexed, stamens reflexed, filaments green.

Pedicel orange, ovary orange.
nectar gland with 2 orange wings.
nectar tube orange, except tip very
bottom which is green. / flower very
sweet smelling

5504.

(?) saprophytic, one human in forest floor.
stem white. apparently 3 locular.
flower a fruit 3 winged structure at
top 6 sided. yellow orange

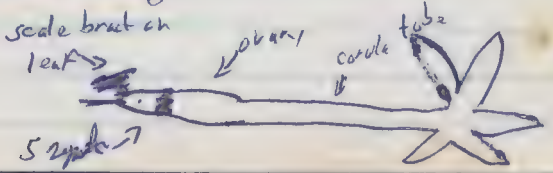


photos

one found with small stalk
structures roots.

5505

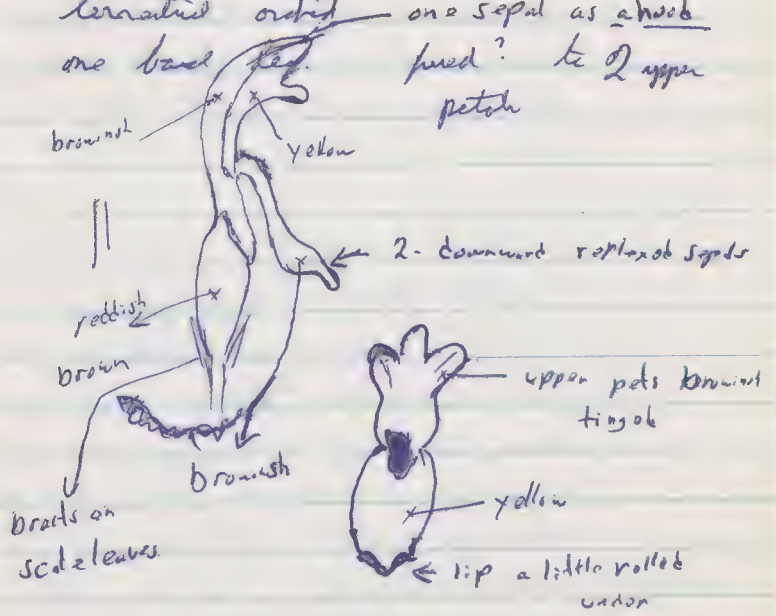
? saprophyte?, leafless flower
yellow orange to orange. 5 petals
inferior ovary



photos

Jarcoglottis

5506.



roots very tuberous

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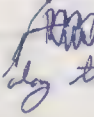
after crossing large stream
900 m.

5507 Anemia phyllitidis (L.) Sw. det R.T. 85
Anemia?



mud bank dry trail

det R.T. 85

5508 Microgramma piloselloides (L.) Copel.
creeping on branches & mud trees

1½ hour walk from Santa rosa
along new road, three distilled
forest, but this tree looking to have
come from primary forest. true to
G.O.n..

5509.

Clusia? melastom?, cauliflorous
regish green, buds pinkish
(5) petals with pink on either side, the
mid rib on the outside, white inside
each petal with a rounded claw like
bluge on one side where it folded under
the other petals, filaments white
(10) anthers yellow, style white
stigma white with 10 lobes the stigmas
flowers strongly fragrant

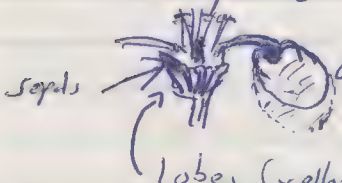
Dec 18 w/ Steve King
road between Santa Rosa y
Mapiri
ca 4 Km from Santa Rosa

5510

Palicourea Rubiaceae small tree
to 5.0 m in partly disturbed or cut
primary forest along road. petioles orangish red.
flowers + flowers yellow.

5511

small to large trees in forest.
flower yellow, petals coralline + reflexed
when open, petals and most hairs dots
in patch around margin



5 petals, 5 small
brownish papery
sepals - 2 10 bract like
lobes (yellow) forming a cup.

Poor Lopez-Pac. + Lara Casa
DPT Dq Ce 08 u 15° 15' S

Dec 19. w/ Steve King
Across river from town of Mapiri
alt ca 840 m.
Disturbed (slightly cut, trails + minor) primary forest. Lots of Hevea.

5512

tree (Euphorbiaceae), leaves attenuate hairy
fruits becoming yellow when mature.
tree produces abundant latex.
stigmas not colored.

5513

(Lauraceae?) fruits becoming reddish
small tree. 3.0 m.

5514

Moraceae? milky sap present,
small tree 3.0 m. in forest.

5515

Cesher., large Herb. 1.5 m. flowers orange
fruits green.

5516

Bignon. Lianes stem epiphyte in
large tree, flowers white.

5517

Marcgraviaceae, climbing about trunk of large fallen tree, branches arching out. inflorescence erect.

5518 Thelypteris arcana (Max & Mett) Morton
large terrestrial fern on moist bank. det R.T. 85

5519 Pepperomia
creeping on rotting log.

5520

Cyperaceae? terrestrial leaves palm like. from a short stem. apparently the stamens appearing first. stem of inflorescence white, later green when fruit mature.
leaves 5 ribbed

5521

Urticaceae, small tree. 4.0 m. Fleshy receptacle yellow translucent, seed in receptacle. green
pedicels reddish

5522

creeping on steep moist bank in forest. forming a dense stand mat-like.
flowers white (5 pet)

5523

(Madeira) Shrub to (2.0 m)
~~stem~~ entire entire plant with red. hairs, petals white, stamens yellow

5524 Tectaria incisa Cav. det R.T. 85.
Tectaria?
large. Terrestrial fern in moist bank in forest

5525

tree 6.0 m flowers lemon yellow

5526 Theobroma

tree with several trunks from base each trunk up to 6-8 in diam. flowers cauliflorous. petals white reflexed.

5527. Heliconia.
large herb ~~leaves~~. blade 5 feet long petals green, bracts & inflorescence pink towards outer half white towards base. many ants present in inflorescence.

5532 Trichomanes angustatum Carm. det RT 85
lacy fern. stems not on trunk
true fern. epiphyte
(some ~~fern~~ on all the rest.)

Along trail to Charo Pampa across Rio

5528 Heliconia

in large herb in ~~forest~~ secondary growth along trail.
large herb. Inflorescence pendent
bracts velvety red. green or magenta
yellow at tips - petals yellow
leaves 6 feet long. ~~stalk~~ to 1.0 m long

5529 Heliconia

" large herb, bracts red at tip, base
bract yellow, petals yellow - tips
petals green - leaves 5 feet high.
cult. known.

5530

small shrub, alt leaves. 5 pen sepals
corolla tubular, petals light lavender.
corolla tube darker lavender.
Bruntelsia ?

5531

Zingiberaceae, large herb along ~~river~~ stream
to 2.0 m. forming dense colony.
petals white, the lower with a light
green blotch near the base.
very fragrant. Cultivated in area
this one possibly cultivated.

← x x x x x x x x x

Dec. 20.

~~only~~ ~~[illegible] between~~ Road between Santa Rosa y Mapiri ca ½ way above ~~or~~ before the Rio Tarapoto primary forest on steep slope where large legume fruits are gathered.

5533

Tree (6 in diam) cauliflorous from permanent flowering site on trunk. Flowers small greenish, ~~tube~~ ~~petals~~ pedicels pinkish and fruits green when mature, pedicels much enlarged

5534 Polystichum muricatum (L) Fe. Polystichum, terrestrial fern on step forested slope det R.T. '55

5535 Manihot.

growing at edge of trail by roadside. —— not apparently cultivated.

5536

Cyclanthaceae, flowers from ~~base~~ ground. Calyx red, petals yellow., Longest leaves to 9 feet

5537

tree (small to 4.0 m)
(melastom?) fruits orange, elongate
a thin (mesocarp?) juicy layer
surrounding the single large seed.

5538 Pepperomia
creeping on log

5539

Annonaceae, small tree to 5.0 m.
trunk, regul + pet furnish, great variation
in flower size on the same branch even
older & large flower turning into paler
& with odor of apples

5540

Palm, one inch trunk, powder
bone below leaves
fruits orange., tree to 9.0 m.
leaves to 1.0 m

5541

melastom, tree to 6.0 m.
fruits blue black when mature

5542

Shrub to 1.3 m. flowers white
fruits small globose, red.

5543

Annonaceae, small tree, to 4.0 m
arching at a steep bank. heart sepals
2 petals greenish yellow.

5544.

large tree. fruits ovoid, pubescent
orange, fruits with milky latex
2 seeds w/ (Hilum) 3/4 line down seed.
fairly delicious pulp surrounding the
2 seeds, only tree seen.

5545 Asplenium radicans L. det R.T. '85
terrestrial fern on steep bank

5546 Peperomia
creeping on rocks.

5547

(melastom.) tree to 5.0 m
leaves white beneath.

5548

tree to 7.0m. fruits orange pulp yellow, one seed. (Asteraceae?)

5549

cyclanthus terrestrial herb. no flower, fruits green

Dec. 26. 1981 w/ Steve King
Bolivia, Cochabamba

Courtyard of Residencial Copacabana
Calle Esteban, City of Cochabamba.
2600 m

5550 Boussingaultia

dense vining vine, cultivated as climbing ornamental, propagated by the tuberous roots or leaf cuttings. almost fruit and stem of tubers produced along stem. vine dead, photo taken very little reddish tint.

Hymenaea courbaril L.

Actividad Potosi on Rock towards Puno, Just Past Airport ca 3 Km

3830 m.

5551 Ulluco

said to be planted in August & harvested in May Tubers will be yellow a yellow with red dots.

5552 Ulluco

Islas de Nicaragua

Peru 1982

Jan 7 (Fri.) Andes

mt. behind Chinchero

Alt. 4100 m.

5553 Oropogon loxensis (Fée) Th. Fr.

growing on dry soil in rocks in grazed pure.

det T.L. Esslinger

Jan 14

S. of Chinchero, Trail from Tauca up past town between two ridges along stream trail 4200 m.

5554 Oropogon loxensis (Fée) Th. Fr.

growing on rock faces in pure.

det T-L. Esslinger

Feb 11
Peru. Dept. of Cuzco
Province of Urubamba
Chinchero, South of Chinchero
at Pueblo called pucathmarca.
Cultivated fields along Piuray lake.
Alt.
Informant Graciano S. h
my Compadre José Cushhuaman Chaque

5555 Ullucus tuberosus.
cultivated, Stems becoming elongated
and recurved. Axillary stolons
present. called Zanahoria Lisas
or Q'ello Chujcha.
Jose Fermin Lisas
planted in Sept and harvested in
may and June. This variety
was farther along in development of
Tubers than 2 other variations
grown ~~at the~~ in the same ~~sate as~~ field
and planted at the same time.
Tuber color yellow, shape.
Plants becoming decumbent, stems reddish
(no insecticides used on Ullucus because none
needed — All Types of Ullucus ~~make~~
are equal for making Lingli
(Same as King et al # 156)

5555
cont no plants seen with more than 5 stamens
(photos taken)

5556 Ullucus tuberosus
Cultivated in Field. n.v. Papas Lisas
Tuber color yellow w red dots stems only slightly if at all reddish no plants seen with more than 5 stamens, flowers yellow green
Photos taken planted in Sept.
& harvested in May & June. Stems not decumbent at collection.
(= King et al. # 157)

5557 Ullucus tuberosus
Cultivated in Field.
n.v. Arequipa Lisas Stems not reddish, leaves held more erect than the other 2 varieties collected.
many flowers seen with 6 stamens and 6 petals. Tubers big like oranges yellow orange.
photos taken.
planted in sept & harvested in May & June
(= King et al # 158)

Feb 4. 1982
Dept. of Cuzco, Province of Urubamba.
South of Tauca, Trail up the stream. Elev. 4200m
(collected by Steve King and Ed Franquemont.)
Steep rock slopes in grazed puna.

5558 Oropogon loxensis (Fée) Th. Fr.
growing on rock faces in grazed ~~paramo~~ puna
Det. Esslinger
n.v. Chapu Chapu

5559 Oropogon loxensis (Fée) Th. Fr.
growing on rock faces
Det. Esslinger

5560 Oropogon loxensis (Fée) Th. Fr.
Det. Esslinger

5561 Oropogon sperlingii Essl. ined.
Det T.L. Esslinger

~~5562 Copagon~~

Feb 5 1982

Chinchero, in village at house of Crasiano

Alt. 3800m

5562 Boussingaultia. cf. diff. sa (CR + RJ) Volkens ~~cf. diffusa~~

Cultivated on rock Ka wall

Vine Succulent vine with reddish stems. Petals white - not reddish tinged. ~~Stigma~~ Style not divided stamens $\leq \frac{1}{2}$ C (centripetal?) ovary white! Flower turning black with age. Stem Becoming thickened at base. - Plants growing in full sun under dry conditions had denser & smaller leaves which were much redder.

n.v. Vergoylawas

The plant was brought to the garden by the owners grandfather many years ago from somewhere lower down.

(= King et al # 202)

ground and used as a poultice for tired aches

NE of Chinchero – at base of
Antaikilka. Alt. 3300m.
Steep scree slope with dense
shrubby vegetation and rocky openings

5563 Ullucus tuberosus Caldas

Trailing succulent vine on steep scree
slope under shade. ~~Flowers~~
Petals yellow green, red tinged
especially at margins. No seeds
seen. Producing small pink, white
and red tubers from axillary
stolons. Tips of stem with
reduced leaves & burrowing into
soil. ~~Fruits~~ Pits in deep shade
lacked red coloration, had much
larger leaves & large petiole.
Forms in sun were much reddish

~~photos~~

nc. _____

photos taken.

(note = Kings et al. # 211) and
(also Davis et al # _____

Feb 9 '82

SE of Chincharo at the village of Tauca. elev. _____

Cultiv. before Tauca from Chincharo

5564 Ullucus tuberosus Caldas

n.v. Arequipa Lisas

Herb Succulent herb cultivated in field for it's edible tubers. Flowers yellow green. Many flowers with abnormal numbers of stamens (4 – 10) and often double the number of petals, Stems green with scattered red ~~lines~~ lines. leaves held more erect in this variety than others. Tubers color yellow orange. Tuber shape round to oblong. Some plants observed with mature seeds.

5565 Ullucus tuberosus Caldas

n.v. Zanahoria Lisas

Succulent herb cultivated in field for it's edible tubers. Flowers yellow green, red tinged. Stems red. Plants becoming decumbent, Terminal shoots with reduced leaves, burrowing in soil and bearing tubers. Tubers white when immature becoming ~~tran~~ oblong and orange yellow when mature. Only flowers with 5 stamens seen.

(Okins #233)

5566 Ullucus tuberosus Caldas

nv. Yurac Lisas

Succulent herb cultivated in field for it's edible tubers flowers yellow green. Stems green, only slightly tinged with mottled lines of red. Terminal shoots becoming partially decumbent

Tuber long and curved. Tuber color white, a few with small pink blotches

(Note this may be a mixed collection of (2-3) varieties).
(= King # 234)

5567 Ullucus tuberosus Caldas
nv. Fantasma Lisas
Succulent herb cultivated in field for its edible tuber. Flowers yellow green. Stems green, mottled with red lines. Stems becoming decumbent. Tubers round. yellow orange with red dots. Only flowers with 5 stamens seen.
(= King # 238)

5568 Ullucus tuberosus Caldas

Succulent herb cultivated in field for its edible tubers.

n.v. Teste haro

(which means with bumps)

Flowers yellow green. Stems slightly tinged with red, especially at base. Tubers long white with pink-red blotches and dots

Stems becoming ~~decumbent~~ slightly decumbent leaves quite erect.

(Sking # 236)

5569 Ullucus tuberosus Caldas

n.v. Arequipa Lisas

Succulent herb cultivated in field for its edible tuber. Flowers yellow green. Many flowers w/ abnormal numbers of stamens, 4-10

Many flowers with double petals
Ovaries on most flowers maturing.
Mature seeds found on many plants
Stems green, slightly red tinged on
ridges. Stems darker green
at upper portions where the leaves
become reduced and stems reddened. (lax)
Leaves held very erect - much more
than other varieties. Becoming
slightly decumbent. Tubers yellow
orange - roundish.

(= Kay # 232)

This variety grown in area for
only 3-4 years purchased in Cuzco
initially.
Beetles observed eating the anthers.
~~and stamens~~ photos taken.

5520 Ullucus tuberosus Caldas

(Also Lisas)

Trailing herb growing over stone fences -
not cultivated. Flowers yellow green with
red tinges. Stems red. leaves red
tinged. Tubers small round white -

becoming pink.

Feb. 11 1982
Chinchero
at East end of lake S. of
Chinchero about 1 hour walk.
elev. ca 3700 m.

5570 Ullucus tuberosus Caldas
nv. Yuraj Lisas
Succulent herb cultivated in field
for it's edible tubers. Flowers
yellow green. Some flowers had
a developing 2° flower coming off the
way. (very small)
Stems green. Tubers - long curved
white.

Feb. 22 1982, 3100 m.

growing on exposed rock faces using on each 2 small shrubs. Above ~~Cinchey~~ Urquillos about 1 km on trail from Chinchero.

5572 Boussingaultia ~~cf. Volkensii GURR~~ Volkensii GURR.

succulent Vining herb twining about cacti and shrubs, stems reddish, midveins of leaves reddish. Twining dextrosely Bract at base of petiole Acute, reddish. Pedicle ~~Floral~~ bracts (2) almost triangular & obtuse if at all cuculate Floral bracts (sepals?) reddish and cuculate, First 2 petals reddish & cuculate, last 3 petals golden yellow-green.

When flowers first open the stamens are erect & cu connate about the style. Anthers are held ± horizontal & completely hide the style. later stamens arch out, Stamens longer than style. stigma not divided. white ovary white. ~~Flow~~ Sepals & petals adhering to fruit when mature — black when mature, seeds produced

producing thickened tubers at base
Twining dextrously;
No tubers in axils seen

= Kings stat # 243, 305

Tubers From Cuzco market
Feb 18

5573 Ullucus
Tubers very long mostly but some
Color white with pink red blotches
veins large white

5574 Ullucus
long red, straight & some curve
Color red, inner layer white.

Tubers from Chinchero market

Sun Feb. 21

5575 Ullucus

Tubers long curved, white with pink red lines & spots., inner layer white.

5576 Ullucus

tubers round, orange with round pink-red spots, inner layer orangeish center of tuber yellowish

5577 Ullucus

Tubers oblong, yellow to orange tinged pinkish lines ~~around~~ through eyes. inner layer yellow, except all pink where pink on outside

5578 Ullucus

Tubers long slightly curved, all white

5579 Ullucus

Triangular - all pinkish orange
only one.

5580 Ullucus

long slightly curved, red.
anna longa red stem pink - finely white.

Peru, Lima
beach at Agua Dulce. (Miraflores)
ca. 50 m

5581 Boussingaultia

cultivated, climbing on tree.

Ecuador

5 Some site a early collection of Bourcieria below Tarqui site 2400 m.

5582 Bourcieria

live

mark in 8

4/17/13 SEM prep

1 J. tv. 9a #1
grenbone green shade

2 B. rubra
Pr. th green brown

3 B. alba.
Fresh green brown

4 SSG3 U.T

5 SSG9 U.T.

6 S293 Tomato